



RF EXPOSURE EVALUATION

1. PRODUCT INFORMATION

FCC ID	2BAWX-TXREXP
Product Description	LABEL PRINTER
Model Name	TX3r Exp, TC200i Exp, TC300i Exp, TC600i, TC600i Exp, TX2er, TX2r Exp, TX3er, TX6er, TX6r Exp, TX200r, TX300r, TX600r, X2000 Exp, X3000, X3000 Exp, X4000, X4000 Exp, X6000 Exp, X8000, X8000 Exp, MR200+, MR200+ Exp, MR300+ Exp, MR600+, MR600+ Exp, MR200i, MR200i Exp, MR300i Exp, MR600i Exp, MR243 Exp, MR343 Exp, MR666 Exp, MR-200t, MR-200t Exp, MR-300t Exp, MR-600t, MR-600t Exp, MR2000, MR2000 Exp, MR3000 Exp, MR6000, MR6000 Exp, MR2k, MR2k Exp, MR3k Exp, MR6k, RT200+, RT200+ Exp, RT300+ Exp, RT600+, RT600+ Exp, RT200i Exp, RT300i Exp, RT600i, RT600i Exp, RT243, RT243 Exp, RT343 Exp, RT643, RT666, RT-200e Exp, RT-300e Exp, RT-600e, RT-600e Exp, RT2208, RT3308, RT6608, RT220c, RT300c, RT600c
Frequency Band (Operating)	<input type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5825GHz <input type="checkbox"/> Bluetooth: 2.402GHz ~ 2.480GHz <input checked="" type="checkbox"/> Others (915MHz)
Device Category	<input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others:
Antenna Diversity	<input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas
Max. Output Power	-4.27dBm
Antenna Gain	-22.57dBi
Minimum Assessment Distance	20cm
Evaluation Applied	<input type="checkbox"/> MPE Evaluation <input checked="" type="checkbox"/> SAR Evaluation
Evaluation Result	Pass

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2. PORTABLE DEVICE EVALUATION METHOD AND LIMIT

Following FCC KDB 447498 D01 “General SAR test exclusion guidance” The corresponding SAR Exclusion Threshold condition, listed below:

- 1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] [f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where
 - f(GHz) is the RF channel transmit frequency in GHz.
 - Power and distance are rounded to the nearest mW and mm before calculation.
 - The result is rounded to one decimal place for comparison The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

- 2) At 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following:
 - a) [Threshold at 50 mm in step 1) + (test separation distance - 50mm) (f(MHz)/150)] mW, at 100MHz to 1500 MHz;
 - b) [Threshold at 50 mm in step 1) + (test separation distance - 50 mm)-10] mW at > 1500 MHz and ≤ 6 GHz;

- 3) At frequencies below 100 MHz, the following may be considered for SAR test exclusion.
 - a) The threshold at the corresponding test separation distance at 100 MHz in step 2) is multiplied by $[1 + \log(100/f(\text{MHz}))]$ for test separation distances > 50 mm and < 200 mm.
 - b) The threshold determined by the equation in a) for 50 mm and 100 MHz is multiplied by 1/2 for test separation distances < 50 mm.
 - c) SAR measurement procedures are not established below 100 MHz. When SAR test exclusion cannot be applied, a KDB inquiry is required to determine SAR evaluation requirements for any test results to be acceptable.

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3. MOBILE DEVICE EVALUATION METHOD AND LIMIT

Human exposure to RF emissions from mobile devices (47 CFR §2.1091) may be evaluated based on the MPE limits adopted by the FCC for electric and magnetic field strength and/or power density, as appropriate, since exposures are assumed to occur at distances of 20 cm or more from persons.

LIMITS FOR GENERAL POPULATION / UNCONTROLLED EXPOSURE

Frequency Range (MHz)	E-field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (Minutes)
0.3 -- 1.34	614	1.63	(100)*	30
1.34 -- 30	824/f	2.19/f	(180/f ²)*	30
30 -- 300	27.5	0.073	0.2	30
300 -- 1500	--	--	f/1500	30
1500 -- 100,000	--	--	1.0	30

*Note:

1. f= Frequency in MHz * Plane-wave Equivalent Power Density
2. The averaging time for General Population/Uncontrolled exposure to fixed transmitters is not applicable for mobile and portable transmitters. See 47 CFR §§2.1091 and 2.1093 on source-based time-averaging requirement for mobile and portable transmitters.

$$S=PG/4\pi R^2$$

Where:

S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator R=distance to the center of radiation of the antenna

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Attestation of Global Compliance(Shenzhen)Co., Ltd

Attestation of Global Compliance(Shenzhen)Std & Tech Co., Ltd

Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: http://www.agccert.com/



4. MEASUREMENT RESULT

A minimum test separation distance ≥ 20 cm is required between the antenna and radiating structures of the device and nearby persons to apply mobile device exposure limits. The distance must be at least 20 cm and fully supported by the operating and installation configurations of the transmitter and its antenna(s), according to the source-based time-averaged maximum power requirements of § 2.1091(d)(2). In cases where cable losses or other attenuations are applied to determine compliance, the most conservative operating configurations and exposure conditions must be evaluated.

Antenna Gain=-22.57dBi (Numeric 0.0055), $\pi=3.14$

Test Mode	Test Frequency (MHz)	Field Strength (dBuV/m@3m)	Max.Output Power (mW)	Power Density (mW/cm ²)	Measurement Limit (mW/cm ²)
900MHz	902.75MHz	90.96	0.37	0.000000405	1

Note:

1. Calculate the SAR test to eliminate thresholds from chapter 2 conditions "3" formula.
2. Max Power (dBm) = Field Strength of Fundamental (dBuV/m@3m)-95.23
3. Max Power (mW) = $10^{(\text{Max power (dBm)}/10)}$
4. This device does not support multi-launch mode when the wireless function is evaluated.

5. CONCLUSION

Since Source-base time average power is below SAR test exclusion power thresholds, the SAR evaluation is not required.

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Tel: +86-755 2523 4088 E-mail: agc@agccert.com Web: <http://www.agccert.com/>